

Counting: Combinations

Name: _____

- 1.) How many distinct ways can a hand of 5 cards be dealt from a standard 52 – card deck?
- 2.) How many strings of length 9 contain exactly five 1's and four 0's?
- 3.) How many ways can a committee of 6 men be selected from a group of 12 men?
- 4.) How many ways can a committee of 8 women be selected from a group of 20 women?
- 5.) How many ways can a committee of 6 men and 8 women be selected from a group of 12 men and 20 women?
- 6.) On a true-false test with 30 questions, Fred knows that 20 of the statements are true and 10 are false. Unfortunately, Fred hasn't the slightest idea which is which. How many ways can he answer the questions so that he has the right number of questions answered true?
- 7.) On a Little League team with 20 players, every player can play every position equally well. How many ways are there to choose 9 players to start the game?
- 8.) Suppose a mother with five children has decided that she needs three willing floor scrubbers. How many possible combinations of three children can be chosen? How does this problem relate to your weed pullers problem in your notes?
- 9.) Crazy Eights is a popular children's card game. Each player is dealt 7 cards from a standard 52-card deck. How many different "hands" of 7 cards are there?
- 10.) A farmer has divided his land into nine plots. He typically leaves two of the plots fallow. How many ways can he choose the two fallow fields?
- 11.) A catering service offers 10 dinner choices. The campus Gourmet Club plans to have four catered dinner meetings during the school year. They do not wish to repeat a menu selection during the year.
 - a.) How many distinct collections of four dinners can they pick? (The order in which the meals are served is unimportant to the club members.)
 - b.) Suppose they also care about the order in which the meals are scheduled. How many distinct schedules are there?

12.) A local pizza store offers a choice of 7 toppings. How many distinct three-topping pizzas do they offer?

Permutations and Combinations mixed

13.) An instructor has divided the class into 7 groups. She wishes to have 3 groups make their presentations today. In how many ways can she arrange the 3 presentations?

14.) Suppose a coin is flipped 10 times. What is the probability that it will land heads exactly five times?

15.) Suppose a coin is flipped 10 times. What is the probability that it will land heads exactly five times, including on the third flip?

16.) In how many ways may can five persons line up to get on a bus?

17. In how many ways may these same people line up if two of the people refuse to stand next to each other?

18.) Does a "combination lock" really use combinations of numbers? Should it be called a "permutation lock?" Explain.

19.) Consider the game called Lotto 47, where the person chooses 6 distinct numbers between 1 and 47. If someone fills out 1000 tickets, what is his or her probability of winning Lotto 47?

20.) There are five finalists in the Mr. Rock Hill pageant. In how many ways may the judges choose a winner and a first runner-up?